



7th International Conference on
**Fourier Transform
Spectroscopy**

David G. Cameron
Chair/Editor

19-23 June 1989
Fairfax, Virginia

Sponsored by
The Coblentz Society

Cooperating Organization
SPIE—The International Society for Optical Engineering

Published by
SPIE—The International Society for Optical Engineering
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone 206/676-3290 (Pacific Time) • Telex 46-7053



SPIE Volume 1145

SPIE (The Society of Photo-Optical Instrumentation Engineers) is a nonprofit society dedicated to advancing engineering and scientific applications of optical, electro-optical, and optoelectronic instrumentation, systems, and technology.

CONTENTS

Conference Committee	xviii
Technical Organizers	xix
Introduction	xxi

INVITED PAPERS

Modulations and Fourier interferometry; Zeeman FTS (Abstract Only)	
G. Guelachvili, Univ. de Paris-Sud (France)	2
Studies of reversible thermochromism in conjugated polymers by FTIR and FT-Raman spectroscopy (Abstract Only)	
J. F. Rabolt, IBM/Almaden Research Ctr.	3
Infrared, Raman, and normal mode studies of structure in peptides and proteins	
S. Krimm, Univ. of Michigan.	4
Fast time-resolved FTS with rapid-scan interferometers	
J. J. Sloan, Univ. of Waterloo (Canada)	10
Langmuir revisited: using IR reflectance spectroscopy to determine monolayer structure at liquid interfaces	
R. A. Dluhy, Battelle Memorial Institute.	22
Case studies of molecular identification, structure determination, and internal molecular dynamics using high resolution FTIR spectroscopy	
B. P. Winnewisser, M. Winnewisser, Justus-Liebig-Univ. Giessen (FRG)	28
Structure and kinetics of molecules at surfaces	
Y. J. Chabal, AT&T Bell Labs.	34
Matrix FTIR spectroscopy of transient species (Abstract Only)	
L. Andrews, Univ. of Virginia.	42
High resolution FTS in the UV	
A. P. Thorne, Imperial College of Science and Technology (UK).	43
Computers and computing in FTIR spectroscopy	
D. Kuehl, J. Duckworth, Galactic Industries Corp.	48
Techniques and application of FTIR vibrational circular dichroism	
T. A. Keiderling, S. C. Yasui, P. Malon, P. Pancoska, R. K. Dukor, P. V. Croatto, L. Yang, Univ. of Illinois/Chicago	57
Systems-analytical approach to action spectroscopy in biology and medicine: Fourier interferometric stimulation	
R. Gemperlein, Ludwig-Maximilians-Univ. (FRG).	64
Radiometrically accurate FTS for atmospheric emission observations	
H. E. Revercomb, W. L. Smith, L. A. Sromovsky, R. O. Knuteson, Univ. of Wisconsin; H. Buijs, Bomem, Inc. (Canada); D. D. La Porte, Santa Barbara Research Ctr.; H. B. Howell, NOAA/NESDIS.	70
FTS of semiconductor photoluminescence	
R. B. Young, N. L. Rowell, National Research Council Canada (Canada)	80
FTIR measurements of minor atmospheric constituents	
F. J. Murcray, D. G. Murcray, F. H. Murcray, A. Goldman, R. D. Blatherwick, Univ. of Denver.	87
High resolution far-IR FTS of the stratosphere: optimization of the optical design of the instrument	
B. Carli, Istituto di Ricerca Sulle Onde Elettromagnetiche (Italy).	93

(continued)

FT-Raman spectroscopy of biological assemblies	
I. W. Levin, E. N. Lewis, National Institutes of Health.	99
Los Alamos Fourier-transform spectrometer: applications to molecular spectroscopy	
B. A. Palmer, R. S. McDowell, Los Alamos National Lab.	104
Role of IR spectroscopy in quality control and chemical process analysis: new applications for FTIR spectrometers (Abstract Only)	
J. Coates, Nicolet Instrument Corp.	110
CONTRIBUTED PAPERS	
Photoacoustic FTIR detection of external lubricants in styrenic polymers	
T. Kumar, K. E. Yock, Mobil Chemical Co.	112
FTIR in fat processing and fermentation technology	
H. Sadeghi-Jorabchi, M. K. Hammouri, R. H. Wilson, P. S. Belton, Institute of Food Research (UK).	116
Automated sampling using the QCircle ATR cell: an example	
F. L. Baudais, Bomem, Inc.; F. M. Wasacz, Spectra-Tech Inc.	119
FTIR analysis of oil emulsions used in the cold rolling of steel	
K. C. Cole, A. Pilon, D. Noël, National Research Council Canada (Canada).	123
Use of the diamond cell in an industrial laboratory (Abstract Only)	
R. L. Barbour, J. D. Stephens, D. G. Cameron, British Petroleum of America.	125
Compositional assurance testing—a systems approach to chemical quality	
J. H. Hartshorn, E. I. du Pont de Nemours and Co., Inc.	126
FTIR spectroscopic studies of wheat in the mid IR	
J. M. Olinger, P. R. Griffiths, Univ. of California/Riverside.	128
Time-resolved FTIR difference spectroscopy applied to ultrathin layers of membrane proteins	
K. Gerwert, G. Souvignier, B. Hess, Max-Planck-Institut für Ernährungsphysiologie (FRG).	130
FTIR spectra and normal vibrational analysis of bilirubin IX α	
X.-Z. Wang, Peking Univ. (China); R. D. Soloway, Univ. of Texas; J.-G. Wu, B.-Z. Yu, G.-X. Xu, Peking Univ. (China).	132
Development and performance of a novel IR/ATR-based glucose sensor system	
C. Weigel, R. Kellner, Technical Univ. Vienna (Austria).	134
FTIR study on the secondary structure of mucin from mucinous cystadenoma of the ovary	
K. Shen, P. Wu, Peking Union Medical College Hospital (China); W. Zhou, F. Liu, H. Guo, J.-G. Wu, Peking Univ. (China).	138
FTIR investigations into the fluidity of lipopolysaccharide and lipid A membrane systems (Abstract Only)	
K. Brandenburg, U. Seydel, Forschungsinstitut Borstel (FRG).	140
IR study of N-methylacetamide on solid surfaces: a model molecule for the peptide group in proteins	
B. Liedberg, C. Törnkvist, I. Lundström, Linköping Univ. (Sweden).	141
Geometrical structure information of 5-phenyl-2-pyridinamine derivatives by means of FTIR	
T. Visser, J. F. C. Stavenuiter, G. Zomer, National Institute for Public Health and Environmental Protection (Netherlands).	143
Infrared analysis of enzymes adsorbed onto model surfaces	
G. M. Story, D. S. Rauch, P. F. Brode III, C. A. Marcott, Procter & Gamble Co.	145
CD FTIR spectroscopy of induced cholesteric solutions (Abstract Only)	
B. Jordanov, Bulgarian Academy of Sciences (Bulgaria).	147
Circular dichroism measurement using FT interferometry	
N. Ragunathan, L. A. Nafie, T. B. Freedman, Syracuse Univ.	148

Vibrational circular dichroism studies of interchain hydrogen bonding in tripodal peptide molecules M. G. Paterlini, T. B. Freedman, L. A. Nafie, Syracuse Univ.; Y. Tor, A. Shanzer, Weizmann Institute of Science (Israel).	150
Magnetic vibrational circular dichroism with an FTIR P. V. Croatto, R. K. Yoo, T. A. Keiderling, Univ. of Illinois/Chicago.	152
Vibrational circular dichroism of proteins P. Pancoska, S. C. Yasui, T. A. Keiderling, Univ. of Illinois/Chicago.	154
Dynamic IR linear dichroism spectroscopy of human-hair keratin A. E. Dowrey, G. G. Hillebrand, I. Noda, C. A. Marcott, Procter & Gamble Co.	156
Near-IR spectroscopy with fiber optics and chemometric data treatment B. Feldhäuser, K. Meya, H. W. Siesler, Univ. of Essen (FRG).	158
FTIR vapor phase flavor library for the rapid identification of unknowns in complex flavor samples (Abstract Only) G. Fischboeck, R. Kellner, Technical Univ. Vienna (Austria); W. Pfannhauser, Research Institute of Food Industry (Austria).	161
FT near-IR spectrometry: using interferograms to determine chemical composition (Abstract Only) R. M. Hoy, W. F. McClure, North Carolina State Univ.	163
Classification of compounds using a window Fourier domain system J. W. Sherman, J. A. de Haset, Univ. of Georgia.	165
IR calibration evaluation and selection using Monte-Carlo methods (Abstract Only) M. A. Lovik, M. L. Olson, Bio-Rad Labs.	167
Evaluation of instrumental correction factors for IR absorption concentration measurements A. Baghdadi, National Institute of Standards and Technology.	168
Advances in FTIR mixture searching (Abstract Only) D. T. Sparks, A. Schlieper, J. Peterman, Nicolet Instrument Corp.	171
Artifacts in FT-Raman spectroscopy D. B. Chase, E. I. du Pont de Nemours and Co., Inc.	172
Spectroscopy with triangular modulation P. L. Polavarapu, Vanderbilt Univ.	174
Phase spectra and phase corrections in high resolution FTS M. C. Abrams, Univ. of California/Berkeley.	176
Effect of apodization on phase correction in FTS S.-F. Fan, C.-J. Lin, Tianjin Univ. (China).	179
Spectrum estimation of FTIR data with sampling errors D. J. Gingras, Ruhr-Univ. Bochum (FRG).	181
Applications of near-IR FT-Raman spectrometry N. A. Wright, K. Krishnan, Bio-Rad Labs.	186
Near-IR Hadamard transform spectrometry A. P. Bohlke, R. M. Hammaker, W. G. Fateley, Kansas State Univ.	188
Optimization of the sample technique for near-IR FT-Raman spectroscopy B. Schrader, A. Hoffmann, M. Tischer, R. Podschadlowski, Univ. of Essen (FRG); A. Simon, Bruker Analytische Meßtechnik GmbH (FRG).	190
FT-Raman spectroscopy in the near-IR: industrial applications and limitations H. F. Shurvell, Queen's Univ. (Canada); F. J. Bergin, Shell Research Ltd. (UK).	192
FT-Raman spectroscopy in industrial research (Abstract Only) S. P. Church, Courtaulds Research (UK).	194

(continued)

Comparison of FT near-IR Raman spectroscopy with FTIR photoacoustic and reflection measurements of solids	
C. Deeley, J. Sellors, R. A. Spragg, Perkin-Elmer Ltd. (UK).....	195
New industrial FT-Raman/FTIR spectrometer	
H. Guy, P. Beauchesne, H. Buijs, Bomem, Inc. (Canada).....	197
Sample field in the ATR experiment (Abstract Only)	
E. H. Korte, Institut für Spektrochemie und angewandte Spektroskopie (FRG); B. Jordanov, Institute of Organic Chemistry/Bulgarian Academy of Sciences (Bulgaria).....	202
FTS using surface electromagnetic waves with aperture excitation	
N. Y. Gushanskaya, V. A. Yakovlev, G. N. Zhizhin, Institute of Spectroscopy/USSR Academy of Sciences (USSR); M. A. Chesters, S. F. Parker, Univ. of East Anglia (UK).....	203
IR reflectance properties of weakly and strongly absorbing surface films	
Y.-S. Yen, J. S. Wong, IBM Corp.	205
Surface characterization of cold-rolled steel by grazing-angle reflection-absorption FTIR spectroscopy	
A. Pilon, K. C. Cole, D. Noël, National Research Council Canada (Canada).....	209
Multispectral microspectroscopy: goals and progress (Abstract Only)	
R. G. Messerschmidt, Connecticut Instrument Corp.....	211
Applications of image analysis for IR microspectroscopic detection of contaminants on microelectronic devices	
K. J. Ward, Sandia National Labs.	212
Micro-FTIR as a stress probe for ceramic materials	
J. W. Rydzak, W. R. Cannon, M. Hanninen, Rutgers Univ.	214
Applications of microspectroscopy in the near-IR region	
M. J. Smith, R. T. Carl, Nicolet Instrument Corp.	225
IR microscopy in an industrial analytical laboratory (Abstract Only)	
A. W. Strawn, Kodak Ltd. (UK).....	227
Buffered mobile phases with MAGIC-LC/FTIR	
R. M. Robertson, J. A. de Haseth, Univ. of Georgia; R. F. Browner, Georgia Institute of Technology.....	228
Thin-layer chromatography/diffuse reflectance FTIR spectrometry of coal extracts	
M. L. E. TeVrucht, P. R. Griffiths, Univ. of California/Riverside.	230
Use of absorbance data for the Gram-Schmidt construction of chromatogram in gas chromatographic/FTIR spectrometry	
B. Wang, X.-J. Lu, L.-F. Zhang, G.-N. Song, X. Che, Dalian Institute of Chemical Physics/Chinese Academy of Sciences (China).....	232
Preparation and IR spectra on some β-diketone complexes with uranyl ion	
N. Shi, X. Ding, W. Zhou, Y. Lu, J.-G. Wu, G.-X. Xu, Peking Univ. (China).	234
FTIR spectra of adducts consisting of tetra-μ-acetatodirhodium (II) and some nitrogen-containing ligands	
W. Zhou, X. Wang, N. Shi, H. Guo, Peking Univ. (China).	236
Characterization of cobalt-exchanged zeolite A by DRIFT spectroscopy	
M. J. Kappers, J. H. van der Maas, Univ. of Utrecht (Netherlands); J. M. Chalmers, J. Howard, ICI Petrochem & Plastics (UK).	238
Investigations of the adsorption of carbon monoxide on platinum and palladium surfaces by in situ FTIR-ATR spectroscopy	
E. Zippel, M. W. Breiter, R. Kellner, Technical Univ. Vienna (Austria).	241
Vibrations at surfaces during heterogeneous catalytic reactions	
A. Aragno, L. Basini, M. Marchionna, A. Raffaelli, Snamprogetti SpA (Italy).	244

Experimental and theoretical spectra of complex ions in oxochloroaluminate melts	
M. A. Einarsrud, M. Ystenes, E. Rytter, Univ. of Trondheim (Norway).....	246
FTIR spectra of amorphous silicates	
K. E. Lipinska-Kalita, L. M. Proniewicz, Jagiellonian Univ. (Poland).....	248
Analysis of halogenated dibenzo-p-dioxins and dibenzofurans using matrix-isolation gas chromatographic FTIR	
C. J. Wurrey, Univ. of Missouri; B. J. Fairless, H. E. Kimball, U. S. Environmental Protection Agency.	250
Examinations of the matrix-isolation FTIR spectra of organic compounds (Abstract Only)	
W. M. Coleman III, R. J. Reynolds Tobacco Co.	252
FTIR spectrum of the N₄⁺ molecular ion trapped in solid neon (Abstract Only)	
M. E. Jacox, W. E. Thompson, National Institute of Standards and Technology.	253
Elucidation of the high temperature oxidation mechanism of a polybenzimidazole through FTIR studies of isotopically labeled materials (Abstract Only)	
J. J. Rafalko, E. Chenevey, Hoechst Celanese.	254
Understanding the interfacial structure of aqueous phospholipid monolayer films via external reflection FTIR spectroscopy	
M. L. Mitchell, R. A. Dluhy, Battelle Memorial Institute.	255
Shift of gallstone components detected with FTIR	
Z. Xu, X. Zhou, Beijing Medical Univ. (China); F. Liu, M. Chen, J.-G. Wu, Peking Univ. (China).	257
FTIR studies of plasma protein behavior on biomaterial surfaces (Abstract Only)	
K. K. Chittur, C. A. Steginsky, Battelle Memorial Institute.	259
Conformational change during modification of creatine kinase by iodoacetamide: a resolution enhanced FTIR analysis	
Y. Lin, J. Zhou, Institute of Biophysics (China); Z.-H. Xu, J.-G. Wu, Peking Univ. (China).	260
FTIR spectroscopy demonstrates the reactivity of the protonated carboxyl group of the acid salt of calcium bilirubinate (Abstract Only)	
R. D. Soloway, Univ. of Texas; J.-G. Wu, D.-F. Xu, Peking Univ. (China); Y.-F. Zhang, Jilin Univ. (China); D. K. Martini, N. K. Hong, Univ. of Texas.	262
FTIR study on calcium ion binding to bilirubin	
J.-G. Wu, Peking Univ. (China); R. D. Soloway, Univ. of Texas; D.-F. Xu, X.-Z. Wang, Peking Univ. (China); D. K. Martini, A. J. Wagner, Univ. of Texas.	264
FTIR analysis of cytochrome b₅ in H₂O and D₂O	
P. W. Holloway, Univ. of Virginia; H. H. Mantsch, National Research Council Canada (Canada).	266
FT spectral study of the H-bond in galanthamine (Abstract Only)	
Z. Burgudjiev, Sofia Univ. (Bulgaria); M. Grinberg, Agricultural Academy (Bulgaria).	268
Temperature dependences of the IR and circular dichroism spectra of ribonuclease A and troponin C	
T. Yamamoto, Univ. of Tokyo (Japan); M. Tanokura, Juntendo Univ. (Japan); M. Tasumi, Univ. of Tokyo (Japan).	269
Vibrational circular dichroism spectrum of 6,8-dioxabicyclo [3.2.1] octane: comparison of experimental and model spectra	
T. Eggimann, N. Ibrahim, H. Wieser, Univ. of Calgary (Canada).	271
Vibrational circular dichroism of simple chiral molecules in the gas phase	
T. B. Freedman, K. M. Spencer, C. McCarthy, S. J. Cianciosi, J. E. Baldwin, L. A. Nafie, Syracuse Univ.; J. A. Moore, J. M. Schwab, Purdue Univ.	273
FTIR vibrational circular dichroism of oligopeptides related to polyproline (Abstract Only)	
R. K. Dukor, T. A. Keiderling, Univ. of Illinois/Chicago.	275

(continued)

Characterization of Langmuir-Blodgett layers and other ultrathin films using polarization modulated FTIR spectroscopy (Abstract Only)	
T. Buffeteau, B. Desbat, J. M. Turllet, Univ. Bordeaux I (France).....	276
Application of step-scan interferometry to dynamic IR spectroscopy	
R. A. Palmer, C. J. Manning, J. A. Rzepiela, J. M. Widder, P. J. Thomas, Duke Univ.; J. L. Chao, IBM Corp.; C. A. Marcott, I. Noda, Procter & Gamble Co.	277
Rheo-optical FTIR spectroscopy of polyamide elastomers	
S. Dekiert, H. W. Siesler, Univ. of Essen (FRG); J. Lohmar, Hüls AG (FRG).....	280
FTIR emission spectroscopy as a tool for studying thin films and thermal changes in samples	
S. V. Compton, J. R. Powell, D. A. C. Compton, Bio-Rad Labs.	283
Applications of FT near-IR/Raman	
R. W. Hannah, A. Ganz, D. Schiering, R. Larsen, Perkin-Elmer Corp.; H. Mould, D. Cutler, A. Turner, R. Bennett, Perkin-Elmer Ltd. (UK).	286
FT-Raman spectroscopy and pulsed excitation (Abstract Only)	
D. B. Chase, E. I. du Pont de Nemours and Co., Inc.; T. Gustafson, Ohio State Univ.....	288
Eliminating fluorescence interference with near-IR FT-Raman spectroscopy (Abstract Only)	
F. J. Purcell, Spex Industries, Inc.	289
Sampling methods in FT-Raman spectroscopy (Abstract Only)	
P. R. Brierley, R. J. Rosenthal, Nicolet Instrument Corp.....	290
Thermogravimetric analysis/FTIR-evolved gas analysis using target factor transformation	
D. A. C. Compton, F. Cahn, Bio-Rad Labs.	291
Phase spectroscopy of surface electromagnetic waves using Fourier spectrometer	
L. A. Kuzik, V. A. Yakovlev, G. N. Zhizhin, Institute of Spectroscopy/USSR Academy of Sciences (USSR); M. A. Chesters, S. F. Parker, Univ. of East Anglia (UK).	294
Regular-reflection IR spectroscopy of historical varnishes	
E. H. Korte, H. Staat, Institut für Spektrochemie und angewandte Spektroskopie (FRG).	296
Tribological studies by ATR-IR analysis	
G. A. Kohler, G. S. Deeb, W. A. Peters, W. E. Breneman, J. W. Westberg, S. M. Barnard, R. W. Duerst, 3M Co.	298
FTIR investigation of thin organic layers on float glass: applications in wettability and adhesion	
J.-M. Berquier, A.-C. Fernandes, P. Chartier, H. Arribart, Saint-Gobain Recherche (France).	300
Enhanced polymer discrimination by IR microtransmission and microreflectance spectroscopy	
K. Krishnan, P. J. Stout, S. L. Hill, Bio-Rad Labs.	302
Reflection spectroscopy with the FTIR microscope	
W. T. Wihlborg, J. A. Reffner, S. W. Strand, F. M. Wasacz, Spectra-Tech Inc.	305
Automated FTIR grazing-angle microscopy: a new approach to microspatial chemical mapping of thin films (Abstract Only)	
F. P. Eng, IBM Corp.	307
FTIR microscopy for forensic fiber analysis: the results of case studies	
M. W. Tungol, A. Montaser, George Washington Univ.; E. G. Bartick, FBI Academy.	308
FTIR microscopy of organic microphases in pharaonic mummy hair samples	
R. Kellner, C. Minich, N. Iskander, M. M. Khater, Technical Univ. Vienna (Austria).	310
Laser transfer of organic adsorbates: a test case using coronene surface patterns transferred with micrometer resolution to IR windows	
M. DeVries, H. Hunziker, H. R. Wendt, D. D. Saperstein, IBM Corp.	313
IR spectroscopy of a low pressure methane/nitrous oxide flame	
K. L. McNesby, R. A. Fifer, U. S. Army.	315

Quantitative analysis of nitrocellulose and pulp in gunpowder by using thermogravimetric analysis/FTIR	
D. J. Johnson, D. A. C. Compton, Bio-Rad Labs.	317
Combined rapid FTIR spectroscopy and thermoanalysis to investigate the kinetics of evaporation and decomposition of liquids	
H. H. Krause, N. Eisenreich, A. Pfeil, Fraunhofer-Institut für Chemische Technologie (FRG).	319
Spectral detection of magnetic ordering: diffuse reflectance of $(Y_{1-x}Er_x)_2BaCuO_5$	
N. I. Agladze, G. G. Chepurko, E. P. Hlybov, M. N. Popova, Institute of Spectroscopy/USSR Academy of Sciences (USSR).	321
Double modulation techniques in FTIR photoluminescence	
F. Fuchs, A. Lusson, J. Wagner, P. Koidl, Fraunhofer Institut für angewandte Festkörperphysik (FRG).	323
Dielectric response of InAs in the far IR (Abstract Only)	
A. K. Wan Abdullah, Univ. Sains Malaysia (Malaysia); T. J. Parker, Univ. of London (UK); C. Patel, Univ. of Oxford (UK).	327
Chemical modification of oxidized and silicon oxide covered aluminium surfaces studied by FTIR/multiple specular reflectance spectroscopy	
A. H. M. Sondag, M. C. Raas, F. J. Touwslager, J. J. Ponjeé, Philips Research Labs. (Netherlands).	328
Quantitative IR spectroscopy of interstitial oxygen in heavily doped silicon	
A. Borghesi, M. Geddo, G. Guizzetti, Univ. di Pavia (Italy); P. Geranzani, DNS Electronic Materials SpA (Italy).	330
FTIR determination of interstitial oxygen concentration of single-side polished silicon wafers	
B. Rennex, National Institute of Standards and Technology.	332
Study on the 1720cm⁻¹ absorption band of Cz-Si by low temperature FTIR measurement	
N. Nagai, Y. Nagasawa, H. Ishida, A. Ishitani, Toray Research Ctr., Inc. (Japan).	335
FTIR study and intensity calculation on the hydration of acetonitrile (Abstract Only)	
W. Liu, S. Weng, X. Wang, J. Li, L. Li, J.-G. Wu, G.-X. Xu, Peking Univ. (China).	337
Evidence for the presence of a distinct phenol-solvent complex in apolar solvents from numerical IR band split procedures	
B. Lutz, J. H. van der Maas, Univ. of Utrecht (Netherlands).	338
FTIR spectra of the C=O and C-H stretching vibration of lauric acid	
S. Weng, J.-G. Wu, G.-X. Xu, Peking Univ. (China).	340
Conformational analysis of starch derivatives by FTIR spectroscopy	
C. Bruijnes, R. Bosman, P. Bareman, A. Besemer, Netherlands Organization for Applied Scientific Research (Netherlands).	342
Vibron-phonon sidebands in the FTIR spectra of the molecular crystal CO₂ (Abstract Only)	
H. W. Löwen, K. D. Bier, H. J. Jodl, Univ. Kaiserslautern (FRG); A. Löwenschuss, A. Givan, Hebrew Univ. of Jerusalem (Israel).	345
FTIR study on the kinetics of the reaction of 4,4'-diisocyanatediphenylmethane with 1,4-butanediol	
Z.-H. Xu, Z. X. Huang, H. J. Xu, Peking Univ. (China).	346
Electron-donor-acceptor complexes of aromatic hydrocarbons with organic acceptors in solution and in the solid state: a quantitative FTIR investigation	
P. Bruni, E. Giorgini, G. Tosi, A. Zampini, Univ. degli Studi di Ancona (Italy).	348
FTIR spectroscopic evidence of phase transition for NaA ROH Kerosine H₂O microemulsion system containing Nd³⁺ ions	
H. Liao, Z.-H. Xu, N. Shi, J.-G. Wu, G.-X. Xu, Peking Univ. (China).	350
Variable temperature FTIR spectra of dicyclohexyl-18-crown-6 isomer C	
Z. Xu, H. Liao, J.-G. Wu, G.-X. Xu, Peking Univ. (China).	352

(continued)

Comment to the expansion of benzene force fields	
M. Ystenes, Univ. of Trondheim (Norway).	354
Vibrational study of poly(ether ether ketone)	
M. Dosière, Univ. de l'Etat (Belgium).	355
Aqueous IR spectroscopy: potential pitfalls studies of EDTA and complexes in solution	
J. R. Powell, K. Krishnan, Bio-Rad Labs.	357
Computer simulations of depth profiling by photoacoustic IR spectroscopy	
J. H. Perkins, P. R. Griffiths, Univ. of California/Riverside.	360
Background spectra for rapid or step-scan FTIR depth profiling	
R. O. Carter III, Ford Motor Co.; R. A. Palmer, R. M. Dittmar, C. J. Manning, S. S. Bains, Duke Univ.; J. L. Chao, IBM Corp.	362
Design considerations for FTS in the near-IR and visible regions (Abstract Only)	
M. J. Smith, R. J. Rosenthal, Nicolet Instrument Corp.	364
Stationary Hadamard transform interferometer	
J. D. Tate, B. Curnutte, Jr., R. M. Hammaker, W. G. Fateley, Kansas State Univ.	365
Miniature FTIR spectrometer for industrial on-line applications	
E. Herrala, P. Niemelä, T. Hannula, Technical Research Ctr. of Finland (Finland).	367
New low cost, high throughput interface card: description and new application opportunities	
C. Lafond, P. Beauchesne, F. L. Baudais, Bomem, Inc. (Canada).	368
Practical aspects of forward and reverse energy flow spectroscopy using the Bomem DA3 FT spectrometer (Abstract Only)	
H. Buijs, A. Zacharie, Bomem, Inc. (Canada).	371
Two-dimensional micro-near-IR/FT-Raman spectroscopy	
B. Schrader, A. Hoffmann, R. Podschadlowski, Univ. of Essen (FRG); A. Simon, Bruker Analytische Meßtechnik GmbH (FRG).	372
Interferometer measurements of stratospheric HCl from 1976 to 1985 (Abstract Only)	
H. Fast, W. F. J. Evans, Atmospheric Environment Service (Canada).	374
Mobile FTIR to measure on-site emissions of volatile organic compounds	
M. L. Spartz, J. H. Fateley, M. R. Witkowski, R. M. Hammaker, W. G. Fateley, Kansas State Univ.	375
In situ measurement and remote sensing of gaseous atmosphere (Abstract Only)	
H. Rippel, Kayser-Threde GmbH (FRG).	377
Design trade-offs for air monitoring by FTIR (Abstract Only)	
W. F. Herget, S. R. Lowry, Nicolet Instrument Corp.	378
Recent advances in FTIR photoacoustic spectroscopy (Abstract Only)	
J. F. McClelland, R. W. Jones, J. S. Oh, L. M. Seaverson, Iowa State Univ. and MTEC Photoacoustics, Inc.	379
Development of FTIR ellipsometry (Abstract Only)	
O. D. Hunderi, J. Bremer, F. Kong, Univ. of Trondheim (Norway).	380
Super sensitive external reflection unit for FTIR spectroscopy	
G. J. Hansen, W. N. Hansen, Utah State Univ.	381
Hadamard-coded, stationary-entrance-mask, photodiode-array spectrometer	
R. A. Van Tassel, Air Force Geophysics Lab.; W. K. Wong, Sensor Systems Group, Inc.	384
Instrumental needs for Hadamard transform spectrometry	
J. S. White, R. M. Hammaker, W. G. Fateley, Kansas State Univ.	391
Optical tolerances in FTS	
J. R. Birch, National Physical Lab. (UK).	393

Fast-scanning Fourier-spectroradiometer BFS-01	
A. A. Balashov, V. A. Vaguine, G. N. Zhizhin, A. I. Chelnokov, Central Bureau for Unique Instrumentation/ USSR Academy of Sciences (USSR).	395
New FTIR techniques for studying biological membranes	
M. S. Braiman, K. J. Wilson, Univ. of Virginia.	397
IR microtransmission and microreflectance of biological systems	
S. L. Hill, K. Krishnan, J. R. Powell, Bio-Rad Labs.	400
FTIR microscopy of biomineralization at 20μ spatial resolution	
R. Mendelsohn, A. Hassankhani, N. Pleshko, Rutgers Univ.; E. DiCarlo, Cornell Univ.; A. Boskey, Cornell Univ. and Hospital for Special Surgery.	403
Interaction of metal ions with D-glucose in a glassy state: an FTIR study	
N. Xi, Z.-H. Xu, J. Wu, G.-X. Xu, Peking Univ. (China).	405
Composition and coordination of nonstoichiometric calcium bilirubinate (Abstract Only)	
Z. Yang, Peking Univ. (China); R. D. Soloway, Univ. of Texas; S. Weng, J. Wang, D. Xu, J.-G. Wu, Peking Univ. (China).	407
How metal ions affect the infrared spectra of Poly A and Poly U	
B.-Z. Yu, W. N. Hansen, Utah State Univ.; J.-G. Wu, H. Guo, L.-P. Wang, Peking Univ. (China).	409
FTIR spectroscopy as a tool for the study of metal ions/D-galactose complexes	
N. Xi, S. Weng, J.-G. Wu, G.-X. Xu, Peking Univ. (China).	411
FTIR study on the hydration of calcium bilirubinate	
H. Guo, Peking Univ. (China); R. D. Soloway, Univ. of Texas; Z. Yang, X.-C. Ding, D.-F. Xu, J.-G. Wu, Peking Univ. (China).	413
FTIR examination of thermal denaturation and gel formation in whey proteins	
D. M. Byler, J. M. Purcell, USDA-ARS-Eastern Regional Research Ctr.	415
Binding effect of metal on the secondary structure of albumin	
L. Li, H. Guo, W. Liu, J. G. Wu, G. X. Xu, Peking Univ. (China).	418
Sampling and resolution enhancement techniques for the IR analysis of adsorbed proteins	
M. P. Fuller, Nicolet Instrument Co.; B. R. Singh, Univ. of Wisconsin.	420
Optimization of a window Fourier domain search system	
J. W. Sherman, J. A. de Haseth, Univ. of Georgia.	423
Partial least-squares calibration diagnostics applied to the FTIR analysis of borophosphosilicate glass thin films	
D. M. Haaland, Sandia National Labs.	425
Quantitative analysis of spectral data by combined deconvolution and curve-fitting	
R. S. Jackson, P. R. Griffiths, J. A. Pierce, H. Gao, Univ. of California/Riverside.	427
Quantitative FTIR analysis using multivariate techniques	
R. P. Durman, D. J. Wood, Royal Arsenal East (UK).	429
Precision in IR quantitative analysis: absorptance is the key	
H. A. Willis, N. Sheppard, Univ. of East Anglia (UK); J. M. Chalmers, ICI Petrochem & Plastics (UK).	431
On-line analysis of fermentation of dairy waste	
P. Fairbrother, W. O. George, J. M. Williams, Polytechnic of Wales (UK).	433
Comparison of multivariate calibration with principal component regression and partial least squares for glucose using IR spectra of human whole blood	
R. Marbach, H. M. Heise, Institut für Spektrochemie und angewandte Spektroskopie (FRG).	437
Intensity corrections for gas temperature determinations at high temperatures from FTIR absorption and emission measurements	
R. A. Fifer, K. L. McNesby, U. S. Army.	439

(continued)

IR emission spectroscopy (Abstract Only)	
M. Milosevic, Harrick Scientific Corp.	441
Transient IR emission spectroscopy	
R. W. Jones, J. F. McClelland, Iowa State Univ.	442
FTS of free radicals: BC, CCN, and CH₃N	
W. T. M. L. Fernando, C. Brazier, N. Oliphant, L. C. O'Brien, P. F. Bernath, Univ. of Arizona; P. G. Carrick, Air Force Astronautics Lab.	444
Use of a gas chromatographic/IR system as a variable temperature gas cell	
G. Jalsovszky, J. Varga, Central Research Inst. for Chemistry/Hungarian Academy of Sciences (Hungary).	446
Use of headspace gas chromatographic/FTIR for the monitoring of volatiles in commercial brand coffees	
S. V. Compton, D. A. C. Compton, Bio-Rad Labs.	448
Optical design and application of light pipe systems in FTIR spectrometer	
M. Yin, B.-Z. Yu, W. N. Hansen, Utah State Univ.	451
Detection parameters in MAGIC-LC/FTIR	
G. K. Ferguson, J. A. de Haset, Univ. of Georgia.	453
Advantages and disadvantages of a chromatographic/FTIR interface based on mobile phase elimination	
K. L. Norton, A. M. Haefner, H. Makishima, P. R. Griffiths, Univ. of California/Riverside.	455
IR spectroscopic determination of low temperature phase transitions in crystals (organic compounds)	
S. O. Paul, C. J. H. Schutte, Univ. of South Africa (South Africa).	457
FTIR and Raman studies on solid nitrogen dioxide: temperature cycling of ordered, disordered, and multicomponent layers (Abstract Only)	
A. Loewenschuss, A. Givan, Hebrew Univ. of Jerusalem (Israel).	459
Variable temperature FTIR study of the liquid crystalline behavior of octakis(n-hexoxy)phthalocyanine-copper(II)	
B. Lutz, J. H. van der Maas, J. van der Pol, W. Drenth, Univ. of Utrecht (Netherlands).	460
Variable temperature FTIR spectroscopy of transition metal complexes using the SCN reporter ligand (Abstract Only)	
R. H. Herber, Rutgers Univ.	463
In situ monitoring of amine-isocyanate reaction by internal reflection FTIR	
D. M. Back, P. Buscemi, D. Palmer, BOC Group, Inc.	464
Diffuse reflectance FTIR of surface-modified Kevlar	
R. Benrashid, G. Tesoro, Polytechnic Univ. of New York; M. T. McKenzie, Jr., E. I. du Pont de Nemours and Co., Inc.	467
FTIR study of chemical changes occurring during coextrusion pulverization of LDPE with styrene-butadiene rubber (Abstract Only)	
L. V. Vladimirov, Institute of Chemical Physics/USSR Academy of Sciences (USSR).	469
Sapphire fibers as in situ multiple internal reflectance cells for monitoring reactions of polymers	
M. A. Druy, L. Elandjian, W. A. Stevenson, Foster-Miller, Inc.; S. K. Ferer, General Dynamics; F. L. Baudais, Bomem, Inc. (Canada).	471
Structure of skin and core in polymer films (Abstract Only)	
G. Zerbi, G. Gallino, Industriale Politecnico (Italy).	473
Fiber optic FTIR spectrometry of laminates	
J. E. Andrews, J. A. de Haset, Univ. of Georgia.	474
Sample depth profiling by photoacoustic spectroscopy/step-scanning interferometry: consideration of mirror-positioning errors	
B. Lerner, J. H. Perkins, G. L. Pariente, P. R. Griffiths, Univ. of California/Riverside.	476

Accurate determination of the spin-orbit splitting of the valence bands of silicon by means of Fourier transform photothermal ionization spectroscopy	
S. C. Shen, Z. Yu, Y. X. Huang, Shanghai Institute of Technical Physics (China).	478
Negative light flux spectroscopy of high T_c superconductors	
N. Y. Boldyrev, V. M. Burlakov, G. N. Zhizhin, S. V. Shulga, Institute of Spectroscopy/USSR Academy of Sciences (USSR).	481
FTIR spectroscopy on local vibrational modes in GaAs	
B. Dischler, H. Seelewind, W. Jantz, Fraunhofer Institut für angewandte Festkörperphysik (FRG); K. Löhnert, Wacker Chemitronic GmbH (FRG).	487
FTIR external reflection study of molecular orientation on semiconductors	
J. Mielczarski, Virginia Polytechnic Institute and State Univ.	489
Characterization of organic-charge transfer superconductors by microreflectance spectroscopy	
J. R. Ferraro, Argonne National Lab.; S. L. Hill, K. Krishnan, Bio-Rad Labs.	491
Comparison of multicomponent quantitative analysis methods for the determination of boron and phosphorous in boronphosphosilicate glass films on silicon	
P. J. Stout, K. Krishnan, Bio-Rad Labs.	494
FTIR study on microstructure of diamondlike amorphous carbon films	
N. Nagai, M. Yoshikawa, H. Ishida, Toray Research Ctr., Inc. (Japan); I. Nagai, A. Ishitani, H. Kuroda, Research Development Corp. of Japan (Japan).	496
Far-IR spectra of the haloacetyl halides	
J. R. Durig, W. Zhao, H. V. Phan, T. S. Little, Univ. of South Carolina.	498
FTS of O_3 in the 3-μm region	
M. A. H. Smith, C. P. Rinsland, NASA/Langley Research Ctr.; V. M. Devi, College of William and Mary; J.-M. Flaud, C. Camy-Peyret, Univ. Pierre et Marie Curie (France).	500
High resolution high temperature spectral line position measurements of CO_2 in the 15-μm spectral region	
M. Hoke, Air Force Geophysics Lab.; M. P. Esplin, Stewart Radiance Lab.	502
Complexes between HCl and proton acceptors in low temperature argon matrices and in gas mixtures	
W. O. George, R. Lewis, Polytechnic of Wales (UK).	505
High resolution FTS: line widths and line shapes of spectral lines emitted from helium and mixed-gas inductively coupled plasmas (Abstract Only)	
A. Montaser, I. Ishii, George Washington Univ.; B. A. Palmer, L. R. Layman, D. E. Hof, Los Alamos National Lab.	509
Techniques of interactive spectrum analysis in high resolution FTS	
M. C. Abrams, Univ. of California/Berkeley.	510
Time-resolved FTIR spectroscopy using a step-scan interferometer	
A. Becker, C. Taran, W. Uhmman, F. Siebert, Albert-Ludwig-Univ. (FRG).	512
Analysis of pulmonary tissue of eighth century natural mummy (Saint Zita, Lucca-Tuscany) by means of FTIR microspectroscopy (Abstract Only)	
E. Benedetti, P. Vergamini, G. Fornaciari, G. Spremolla, Univ. di Pisa (Italy).	514
Micro-FTIR characterization of human lung tumor cells (Abstract Only)	
E. Benedetti, Univ. di Pisa (Italy); L. Teodori, CRE-ENEA-Casaccia (Italy); P. Vergamini, Univ. di Pisa (Italy); M. L. Trinca, F. Mauro, CRE-ENEA-Casaccia (Italy); F. Salvati, Forlanini Hospital (Italy); G. Spremolla, Univ. di Pisa (Italy).	515
IR microscope: a versatile and universal sampling accessory	
F. J. Bargin, C. A. Gilchrist, I. Jones, Shell Research Ltd. (UK).	516

(continued)

1145-255	Absolute IR intensities of water-alcohol mixtures J. E. Bertie, M. K. Ahmed, S. Baluja, Univ. of Alberta (Canada).	518
1145-239	Topical protectant evaluation by FTIR spectroscopy E. H. Braue, Jr., M. G. Pannella, U.S. Army Medical Research Institute for Chemical Defense.	520
1145-242	On-line monitoring of products generated in the combustion of polymeric materials using FTIR spectroscopy (Abstract Only) M. R. Nyden, National Institute of Standards and Technology.	522
1145-103	FTIR emission spectroscopy of catalysts J. Mink, Institute of Isotopes/Hungarian Academy of Sciences (Hungary); G. Keresztury, Central Research Institute for Chemistry (Hungary).	523
1145-101	High temperature DRIFT spectra measurements (Abstract Only) M. Handke, K. Czarnecki, Univ. of Mining and Metallurgy (AGH) (Poland).	525
1145-97	FTS in the UV range (Abstract Only) P. H. Turner, Bruker Spectrospin Ltd. (UK); A. Simon, Bruker Analytische Meßtechnik GmbH (FRG); R. Rubinovitz, Bruker Instruments, Inc.	526
1145-275	Performance and applications of a very high resolution FT spectrometer (Abstract Only) P. H. Turner, Bruker Spectrospin Ltd. (UK); R. Rubinovitz, Bruker Instruments, Inc.; A. Simon, Bruker Analytische Meßtechnik GmbH (FRG).	527
1145-237	Advantages and use of the step-scan technique in mid-IR FTS (Abstract Only) R. Rubinovitz, Bruker Instruments, Inc.; J. Seebode, A. Simon, Bruker Analytische Meßtechnik GmbH (FRG).	528
1145-240	Investigations into the chromatographic optimization of combined gas chromatographic/FTIR/MS (Abstract Only) D. Wulff, Hewlett Packard Co.	529
1145-272	Application of an FT-Raman accessory interfaced to an FTIR spectrometer (Abstract Only) R. Rubinovitz, Bruker Instruments, Inc.; A. Simon, Bruker Analytische Meßtechnik GmbH (FRG).	530
1145-302	On-line FTIR measurement of the DEG-content in molten PETP using a high pressure, high temperature flow cell (Abstract Only) R. K. Stengler, G. Weis, Automatik GmbH (FRG).	531
1145-99	FTIR reflection-absorption spectroscopy of glycine absorbed upon copper A. Ihs, B. Liedberg, Linköping Univ. (Sweden).	532
1145-238	IR microspectroscopy of pathologic tissue T. J. O'Leary, W. F. Engler, K. M. Ventre, Armed Forces Institute of Pathology.	534
1145-252	FTIR spectroscopy evidence of native cellulose I allomorphism (Abstract Only) S. Y. Maslov, D. A. Sukhov, Technological Institute of Pulp and Paper Industry (USSR).	536
1145-248	Spectral lineshape functions for off-axis detectors in Michelson interferometers M. H. Bruce, Utah State Univ.	538
1145-229	Supercritical fluid chromatography/FTIR spectroscopy of food components E. M. Calvey, S. W. Page, Food and Drug Administration; L. T. Taylor, Virginia Polytechnic Institute and State Univ.	540
1145-303	Real-time measurement of polyurethane foam reactions and hydrogen bonding by FTIR spectroscopy B. L. Davis, M. A. Harthcock, C. P. Christenson, R. B. Turner, Dow Chemical Co.	542
1145-259	IR and visible spectra and magnetic properties of sodium and potassium bis (2,4-pentanedionato) selenito cobaltate (II) and nickelate (II) complexes (Abstract Only) S. B. El-Maraghy, R. S. Kamal, L. S. Shaker, A. A. A. Emara, Ain-Shams Univ. (Egypt).	544
1145-277	Palladium (II) hydrazopyrazolone complexes (Abstract Only) S. B. El-Maraghy, K. A. R. Salib, S. L. Stefen, Ain-Shams Univ. (Egypt).	545

1145-247	Raman spectroscopy of stressed samples of oriented poly(ethylene terephthalate) L. J. Fina, Rutgers Univ.; D. I. Bower, I. M. Ward, Univ. of Leeds (UK).	546
1145-105	Relationship between IR intensity theories: electro-optical parameters and bond polar parameters B. Galabov, T. Dudev, Univ. of Sofia (Bulgaria).	548
1145-258	Improved far-IR vibrational spectroscopy of GaP: an exacting test of theory S. B. Upadhyay, G. A. Gledhill, R. C. Newman, Univ. of London (UK).	551
1145-278	High resolution FTIR study of localized vibrational modes due to C in GaAs: measurement of internal strains and structure of the C(1) lines G. A. Gledhill, S. B. Upadhyay, Univ. of London (UK); M. R. Brozel, UMIST (UK); R. C. Newman, Univ. of London (UK).	553
1145-263	S₁: the quantitative measurement of distortion of smoothed FTIR spectra (Abstract Only) W. J. Hai, Shanghai Teachers Univ. (China).	556
1145-243	FTIR studies of molecular assemblies on solid surfaces V. M. Hallmark, L.-B. Shih, P. Stroeve, J. F. Rabolt, IBM/Almaden Research Ctr.	557
1145-304	Functional group imaging: methods, experimental considerations, and applications M. A. Harthcock, B. L. Davis, S. Nitzsche, Dow Chemical Co.	559
1145-264	High resolution FTS in the far IR (Abstract Only) D. Hausamann, German Aerospace Research Establishment (FRG).	562
1145-262	Fourier transform spectra of alkali metal impurities in silicon and germanium L. T. Ho, Institute of Physics (Taiwan).	563
1145-260	Application of FFT in phase correction and mathematical filtering P. Jaakkola, Univ. of Helsinki (Finland).	565
1145-253	Compact multichannel FTIR sensor with a Savart-plate interferometer S. Kawata, Y. Inouye, S. Minami, Osaka Univ. (Japan).	567
1145-305	Influences of surface reflection on diffuse reflectance measurements (Abstract Only) E. H. Korte, H. Staat, Institut für Spektrochemie und angewandte Spektroskopie (FRG).	569
1145-280	FTIR and thermogravimetric/FTIR characterization of a polyethylene photodegradable concentrate T. Kumar, Mobil Chemical Co.; D. J. Johnson, D. A. C. Compton, Bio-Rad Labs.	570
1145-113	Regularity bands behavior in IR spectra of polymers with a partly disturbed regular structure (Abstract Only) I. V. Kumpanenko, N. V. Chukhanov, Institute of Chemical Physics/USSR Academy of Sciences (USSR).	574
1145-269	Applications of step-scan interferometry C. J. Manning, J. M. Widder, R. A. Palmer, Duke Univ.; J. L. Chao, IBM Corp.	575
1145-246	Design principles and instrumentation for step-scan FTIR C. J. Manning, R. A. Palmer, Duke Univ.; J. L. Chao, IBM Corp.	577
1145-106	Problems and caveats associated with the determination of protein conformation by FTIR spectroscopy H. H. Mantsch, W. K. Surewicz, A. Muga, D. J. Moffatt, H. L. Casal, National Research Council Canada (Canada).	580
1145-234	High resolution IR spectra of ν_1 and ν_3 of nitrogen trifluoride (Abstract Only) J. K. McDonald, U.S. Army Missile Command.	582
1145-270	Development of mid-IR fiber optics for spectroscopic applications R. G. Messerschmidt, Connecticut Instrument Corp.; J. A. Harrington, Rutgers Univ.	583
1145-233	Identification of fatty acid isomers by gas chromatography/matrix isolation/FTIR spectroscopy M. M. Mossoba, R. E. McDonald, J.-Y. T. Chen, S. W. Page, Food and Drug Administration.	585
1145-245	Low temperature (75-400° C) oxidation study of coal by DRIFT spectroscopy (Abstract Only) N. R. Smyrl, E. L. Fuller, Jr., Martin Marietta Energy Systems, Inc.	587

(continued)

Automated chemical quality control using FTIR (Abstract Only)	
J. F. Sprouse, Sprouse Scientific Systems, Inc.	588
FTIR emission measurements by exciting with a laser	
N. Teramae, T. Sawada, Univ. of Tokyo (Japan); S. Tanaka, Iwaki Meisei Univ. (Japan).	589
Cryogenic IR dual optical channel interferometer-spectrometer for upper atmospheric measurements	
V. A. Thurgood, R. J. Huppi, Utah State Univ.	591
FTIR-spectroscopy and quartz surface polariton splitting by ion-implanted layer	
G. N. Zhizhin, V. A. Yakovlev, Institute of Spectroscopy/USSR Academy of Sciences (USSR); K. T. Antonova, Institute of Solid State Physics/Bulgarian Academy of Sciences (Bulgaria).	595
FT-Raman spectroscopy of thin films by integrated and fiber optics techniques (Abstract Only)	
C. Zimba, V. M. Hallmark, J. D. Swalen, J. F. Rabolt, IBM/Almaden Research Ctr.	597
Direct determination of conformational disorder in biological membranes by FTIR spectroscopy	
R. Mendelsohn, M. Davies, H. F. Schuster, J. W. Brauner, Rutgers Univ.; R. A. Dluhy, Battelle Memorial Institute.	598
Gas chromatographic/matrix isolation/FTIR studies of decomposition products of Irganox 1010 in an aqueous ethanol system	
J.-Y. T. Chen, M. M. Mossoba, S. L. Varner, J. A. G. Roach, J. A. Sphon, S. W. Page, Food and Drug Administration.	600
Applications of FT-Raman spectroscopy to highly unsaturated phosphatidylcholine multilamellar membrane assemblies	
E. N. Lewis, B. J. Litman, I. W. Levin, National Institutes of Health.	602
Effect of diffraction in high resolution FTIR spectrometers (Abstract Only)	
K. Salonen, J. K. Kauppinen, Univ. of Turku (Finland).	605
Dehydration of erythromycin dihydrate: a microscopy-FTIR application (Abstract Only)	
M. A. Smith, R. S. Chao, M. S. Bergren, D. A. Clark, Upjohn Co.	606
Quantitative IR spectroscopy of glucose in blood using partial least-squares analyses	
K. J. Ward, D. M. Haaland, Sandia National Labs.; M. R. Robinson, R. P. Eaton, Univ. of New Mexico.	607
Low temperature IR study of deuterated NH₄VO₃	
D. de Waal, A. M. Heyns, Univ. of Pretoria (South Africa).	609
Analysis of environmental air sample extracts by gas chromatography/matrix isolation-IR spectrometry	
J. W. Childers, NSI Technology Services Corp.; N. K. Wilson, R. K. Barbour, U. S. Environmental Protection Agency.	611
FTIR microspectrometry of individual petroleum fluid inclusions in geological samples	
M. R. O'Grady, C. M. Conroy, L. T. Taylor, C. L. Knight, R. J. Bodnar, Virginia Polytechnic Institute and State Univ.	613
Spectral measurements of atmospheric OH and O₂ near-IR airglow with a Michelson FTS and InGaAs detector (Abstract Only)	
R. J. Huppi, J. Kristl, T. Hudson IV, Utah State Univ.	615
Laboratory scale reaction monitoring using an FTIR deep immersion probe	
W. M. Doyle, Axiom Analytical, Inc.	616
Instrumental considerations in IR biospectroscopy	
J. O. Alben, C. F. Hemann, Ohio State Univ.; J. J. Hill, Univ. of Illinois.	618
Aqueous reversed-phase HPLC/FTIR using diffuse reflectance detections (Abstract Only)	
V. F. Kalasinsky, T. H. Pai, R. C. Kenton, K. S. Kalasinsky, Mississippi State Univ.	622
High resolution FTS of N₂O discharge by selective polarization modulation	
M. Elhanine, R. Farrenq, G. Guelachvili, Univ. de Paris-Sud (France).	623

FTS of OH produced in a microwave surface plasma	
A. Benidar, Univ. de Paris-Sud (France); C. Chackerian, Jr., NASA/Ames Research Ctr.; P. Chollet, Ecole Supérieure d'Electricité (France); R. Farrenq, G. Guelachvili, M. M. Chapey, Univ. de Paris-Sud (France); S. Saada, Ecole Supérieure d'Electricité (France).	625
Improved versatility of the Connes-type interferometer of Laboratoire d'Infrarouge	
Q. L. Kou, J. Collet, G. Guelachvili, A. Ubelmann, Univ. de Paris-Sud (France).	627
Resolution, apodisation, and bandshape in FTIR spectroscopy	
P. B. Tooke, S. F. Parker, British Petroleum Research (UK).	629
DRIFT spectroscopy of polymers (Abstract Only)	
J. Jansen, Nederlandse Philips Bedrijven BV (Netherlands); R. Tuckerman, Philips Scientific (UK).	631
IR spectroscopy and the art of restoration (Abstract Only)	
S. Firth, Philips Analytical (UK).	632
Diffuse reflectance on photoacoustic spectrometry? (Abstract Only)	
S. Firth, Philips Analytical (UK).	633
Role of FTIR in the identification of domoic acid, a new shellfish toxin (Abstract Only)	
M. Falk, National Research Council Canada (Canada).	634
FTIR monitoring of polyisoimide transformation (Abstract Only)	
M. J. Weiss, Lockheed Aeronautical Systems Co.	635
Radiometric calibration of Fourier transform semiconductor photoluminescence	
N. L. Rowell, National Research Council (Canada).	636
Author Index	639